Yacc Examples

66.648 Compiler Design Lecture (01/28/98)

Computer Science

Rensselaer Polytechnic

Lecture Outline

YACC program format

Examples - These are in the course home page under Pgms/yaccpgms

YACC program format

It Consists of three parts as in the case of lex.

1. Declarations

2. Productions

3. Programs

Format

```
%{
   /* Parser Specs */
   #include ...
   #define …
%}
%token STDK
%token STRING
%start Program
```

Format Cont...

```
%%
Program: PROGRAMTK..
         ;
stmts: stmts stmt
       |
       ;
...
%%
```

Format Cont...

```
%%

void yyerror(char *) { ...}

void main(void)
{  yyparse();
}
```

Declaration Section

Any C initialization that may be necessary for the parser's interface with the rest of the system.

The specification of various language categories

or tokens. (Sometime certain precednces).

The specification of the left hand side of a particular production as the start symbol.

Productions

This part is a specification of the grammar in LALR(1) of whatever we want to parse.

For your first project, the grammar will be that of Java.

It is essentail that the grammar is of LALR(1) - free of ambiguities - Otherwise, you will get error messages such as shift-reduce conflicts and/or reduce/reduce conflicts.

Supporting Program Section

This is a third major part of the parser specification file. This optional section may contain a number of supporting C functions or compiler directives to include a file containing these functions.

- The function yyerror(), that allows the user to specify action taken by the parser when a finite state machine enters an error state.
- The parse alos requires that a scanner yylex() be provided. So, if you don't use lex, you have to provide such a function.

Compiling YACC Programs

yacc -d -v parser.y

(-d produces y.tab.h defining tokens as integer numbers.

-v produces y.output, the complete finite state machine description. -v can be omitted most often unless you are debugging the grammar itself.)

This produces y.tab.c file.

To compile,

gcc y.tab.c -ll -ly

-ll and -ly are lex and yacc libraries.